



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/015,539	12/12/2001	Charles Corbalis	CALIP006	3646
22434	7590	01/21/2004	EXAMINER	
BEYER WEAVER & THOMAS LLP			KIANNI, KAVEH C	
P.O. BOX 778			ART UNIT	
BERKELEY, CA 94704-0778			PAPER NUMBER	
			2877	

DATE MAILED: 01/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/015,539	CORBALIS ET AL.	
	Examiner	Art Unit	
	Kevin C Kianni	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-56 is/are pending in the application.
- 4a) Of the above claim(s) 28-56 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☒ Claim(s) 20-27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.


Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other:  |

DETAILED ACTION

- Applicant's election without traverse of claims 1-27, in paper no. 6 (12/09/03), is acknowledged, and thus, this restriction is made FINAL.

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. As stated by applicant in paragraph 0006 of specification, the drawing of fig. 1 is conventional.

Claim Objections

2. Claims 26-27 are objected to because of the following informalities: in the third line of claims 26 and 27 the word 'focussed' is misspelled. Appropriate correction is required.

Allowable Subject Matter

3. Claims 20-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 20 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein each beam monitoring element

Art Unit: 2877

comprises: a first light block having formed therein, a first aperture; a monitor lens; and a detector element for detecting the monitor beam after it passes through the first aperture and passes through the monitor lens wherein the monitor beam provides working beam positional misalignment information in combination with the rest of the limitations of the base claim. Claims 21-27 depend on claim 20 and therefore they are also allowable.

Claim Rejections –

35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

and - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention

dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-7, 9-12 and 14-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Novotny (US 6,625,341).

Regarding claim 1, Novotny teaches an optical switch (shown at least if fig. 7-8; see abstract) comprising:

an array of optical input channels 102 each capable of carrying an associated input light beam (col. 13, line 66); an array of output channels 104; an array of beam monitoring elements 110/112;

a switching array 302 for coupling selected input channels 102 to selected output channels 104 enabling the switching of each input light beam to one of a plurality of output channels 104 (shown in at least fig. 7, item input beam from input channels 102 switched by mirrors 302-304 to output channels 104);

a beam splitter 702/704 optically interposed between the switching array 302/304 and the array of output channels 104 to split input light beams into a monitor beam and a working beam (shown in at least fig. 7, item light split by 702/704 into monitoring beam to monitors 110/112 and working beams to output channels 104); and wherein each beam monitoring element (array 110/112) measures one of the monitor beams to provide optical information used for adjusting the switching array 302/304 such that the working beams enter the output channels 104 having desired optical characteristics (see col. 2, lines 24-31 and col. 3, lines 25-28).

Regarding claims 2-5, Novotny further teaches wherein the beam splitter comprises a partially reflective surface optically positioned such that the monitor beam is reflected by the partially reflective surface onto the array of beam monitoring elements 110/112, and such that the working beam passes through the partially reflective surface onto the array of output channels 104 (shown in fig. 7, item 702/704). wherein the optical information provided by the beam monitoring element enables the adjustment of the working beam to adjust for positional misalignment errors and angular misalignment errors so that the working beams enter the output channels having desired optical characteristics (col. 2, lines 24-31, also col. 3, lines 25-28, wherein misalignment errors are corrected see more specifically col. 5, lines 30-38); wherein a single beam monitoring element measures optical power in a monitor beam such that both the angular misalignment and the positional misalignment of a working beam can be detected and adjusted (see col. 14, lines 23-34, wherein angle/position of beams are adjusted see col. 8, lines 45-67); wherein each beam monitoring element includes means for measuring the monitor beam thereby determining the positional misalignment and angular misalignment in the working beam (col. 2, lines 24-31, also col. 3, lines 25-28, wherein misalignment errors are corrected see more specifically col. 5, lines 30-38).

Regarding claims 6-7, Novotny further teaches wherein the beam monitoring elements provide optical information used to adjust the working beams such that the beams enter the output channels having a desired optical power (see col. 14, lines 35-

44); wherein the desired optical power is an optimal amount of optical power (see col. 14, lines 35-44; wherein the amount of light intensity is amount of optical power).

Regarding claims 9-12 and 14-19, Novotny further teaches wherein the switching array comprises, in combination, control circuitry, a first movable reflector array, and a second movable reflector array, each array including a plurality of movable reflectors, the position of which is controlled by control circuitry, wherein the reflectors are positioned such that the input light beams pass onto the first movable reflector array, and such that the plurality of input light beams are reflected from the movable reflectors of the first reflector array onto the reflectors of the second reflector array enabling the switching of the input light beams to selected output channels (shown in at least fig. 7, item moving reflecting/switching arrays 302 and 304 direct light to output arrays 104, and see abstract; see also col. 2, lines 13-31); a first lens array including a plurality of first lenses 114, positioned such that the plurality of input light beams pass through the plurality of first lenses onto the switching array 302; and a second lens array including a plurality of second lenses 706, positioned such that the working beams pass through the plurality of second lenses 706 into the output channels 104; wherein the working beams enter the output channels having optimized beam power (see col. 14, lines 35-44); wherein the control circuitry, using information provided by the beam monitoring elements, adjusts the angular misalignment and the positional misalignment of the working beams (see col. 14, lines 35-44); wherein the monitor lenses of the beam monitoring elements are included as part of the second lens array 706; wherein the

plurality of output channels comprise a plurality of output fibers 104; wherein the plurality of output fibers 104 are positioned a first distance from the partially reflective surface 704 and the monitor lenses 706 of the plurality of beam monitoring elements 112 are positioned a second distance from the beam splitter 704 (shown in fig. 7, items 104, 112 and 704 distances); wherein the first distance the output fibers are positioned from the beam splitter and the second distance the monitor lenses are positioned a from the beam splitter are such that the first distance is approximately the same as the second distance (shown in fig. 7, items 104 and 112 having approximately equal distances from 704); wherein each beam monitoring element comprises: a first quadrature detector element; a second quadrature detector element; and a second beam splitter 704 for reflecting a portion of the light of the monitor beam into the second quadrature detector element and for passing another portion of the light of the monitor beam through the second beam splitter into the first quadrature detector element (see col. 13, lines 50-65); wherein the portion of the light measured by the first quadrature detector element provides information used to determine and adjust the position of the working beam; and wherein the another portion of the light measured by the second quadrature detector element is used, in conjunction with the portion of the light measured by the first quadrature detector element, to provide information used to determine and adjust the angle at which the working beam enters the output channels (see col. 2, lines 25-31 and col. 13, lines 50-65).

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Novotny.

Regarding claim 13, as stated above, Novotny teaches all limitations that claim 13 depends on. Novotny, in the first embodiment, further teaches wherein each beam monitoring element comprises: a monitor lens 705; a detector element 110; wherein the monitor beam passes through the monitor lens where the optical power of the monitor beam is measured by the detector element 110/112.

However, in the above embodiment, Novotny does not teach wherein the above passing of the monitor beams implemented through a fiber. This limitation is taught in another embodiment (see col. 16, line 62-col. 17, line 7). Thus, it would have been obvious to a person of ordinary skill in the art when the invention was made to combine the above embodiments of Novotny by modifying the light coupling from the splitter 702 onto detector 110 by installing an optical fiber between the lens array 705 and detector 110, in order to construct an optical switch that includes the above limitation, since such combination is compatible in the Novotny's switching system having similar input/output signals and since such coupling would provide an optical switch system that the loss of light intensity is minimized (see col. 3, lines 25-28).

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over combination of Novotny and Boord et al. (US 5,793,912).

Regarding claim 8, as stated above, Novotny teaches all limitations that claim 8 depends on. Novotny further teaches wherein the beam splitter 702/704 splits light into monitor beam and working beam (shown in fig. 7, item monitor beam directed to detector 110/112 and working beam directed to output fibers 104).

However, Novotny does not teach the above beam splitter is included as part of rhomboid prism assembly which is positioned such that the monitor beams and the working beams exit the rhomboid prism assembly substantially parallel to each other. Boord teaches an optical switching system shown at least in fig. 13 in which a beam splitter is included as part of rhomboid prism assembly such that two beams exit the rhomboid prism assembly substantially parallel to each other (see col. 14, lines 7-14). Thus, Boord provides a simple and inexpensive means of optical transmission through an array of fibers in which input light from a fiber is directed to a single element photodetector (see col. 2, lines 13-30). Thus, it would have been obvious to a person of ordinary skill in the art when the invention was made to modify Novotny's optical switch by replacing the splitter 702/704 with that of conventional Boord's rhomboid prism assembly 39 in order to construct an optical switch that includes the above limitation, since such combination would provide an optical switch system that intensity of the signals are equalized (see col. 2, lines 9-10), and also the loss of light intensity is minimized (see col. 3, lines 25-28).

Citation of Relevant Prior Art

8. Prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In accordance with MPEP 707.05 the following references are pertinent in rejection of this application since they provide substantially the same information disclosure as this patent does. These references are:

Mayeux 5390040	Teaches rhomboid prism assembly with two parallel beam outputs
Ducellier et al. 6600849	Teaches at least claim 1

Art Unit: 2877

Bowers et al. 6643425 Teaches at least claim 1

Ma et al. 6567574 Teaches at least claim 1

Street et al. 6549691 Teaches at least claim 1

Burroughs et al. 65680846 Teaches at least claim 1

McGuire, Jr. 6636654 Relevant to claims

Hirabayashi et al. Relevant to claims

These references are cited herein to show the relevance of the apparatus/methods taught within these references as prior art.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Cyrus Kianni whose telephone number is (703) 308-1216.

The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 6:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font, can be reached at (703) 308-4881.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

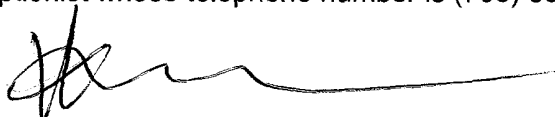
or faxed to:

(703) 872-9306 (for formal communications intended for entry)

or:

Hand delivered responses should be brought to Crystal Plaza 4, 2021 South Clark Place, Arlington, VA., Fourth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956.



K. Cyrus Kianni
Patent Examiner
Group Art Unit 2877

January 15, 2004